

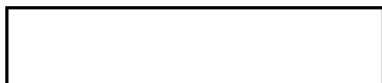
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7 February 1966

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Attention:



Subject: Rapid Interpretation Printer/Processor Flyaway Kit  
CID Proposal No. 66-100U

Reference: Our visit of 12 January 1966

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As per your verbal request of 12 January 1966, attached please find our firm fixed price quote of [redacted] to accomplish the scope of work as indicated in our proposal CID 66-100U, dated 27 January 1966.

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For your information, [redacted] Vice President [redacted] delivered our technical proposal to your engineering group on 3 February 1966.

We are most anxious to perform this program; and because of this and our background in depth in this field, we are most confident that you will be completely satisfied with our performance.

If we can be of any further assistance in this matter, please advise.

Very truly yours,



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Program Administrator

Attachment

Declass Review by NIMA/DOD

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Approved For Release 2003/01/28 : CIA-RDP78B04770A002600090006-0

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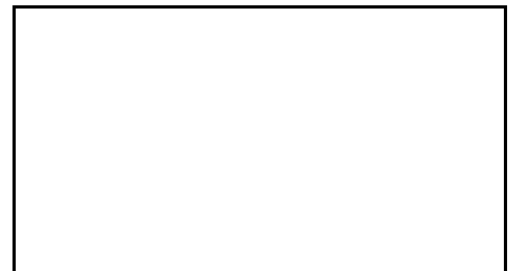
PROPOSAL FOR  
RAPID INTERPRETATION PRINTER-PROCESSOR  
FLYAWAY KIT

Proposal No.: CLD 66-100U

Date: 27 January 1966

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Prepared by:



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## 1.0 INTRODUCTION

The objective of this proposal is to briefly present a plan for the development of a Rapid Interpretation Printer-Processor Flyaway Kit for copying selected sections of a roll of aerial reconnaissance film while it is being viewed on a portable light table. The program will result in the development of a portable printing and processing capability that may be used in conjunction with a [ ] GFL-918 LW light table or other similar light tables in austere field operations. The program includes the design, fabrication, assembly, and test of all components required to expose and process high resolution, high quality copies.

The Diazo duplicating process will be utilized because of the many advantages it provides that are particularly attractive for field operations and the success attained with this process under the Rapid Interpretation Printer-Processor program [ ] The Rapid Interpretation Printer-Processor Flyaway Kit will produce copies with the following characteristics when [ ] Unitone Diazo Film is used:

- 200 line pairs per millimeter resolution
- 18 Distinct levels of gray
- 1.8 Maximum density

The Rapid Interpretation Printer-Processor Flyaway Kit will be designed for rapid set-up and tear-down and will stress ease of operation along with quality of output imagery. The Flyaway Kit will be designed to be compatible with present operational procedures and will operationally complement the light table by providing a much needed duplicating capability.

The complete Flyaway Kit will be packaged into two packing cases of the type used for transporting the [ ] portable light table. One case will contain

the light table, exposure station, and raw Diazo stock, while the other will house the processor, the system electronics, and spare parts. The complete unit will be provisioned for operation without further support (other than raw film and a minute quantity of water) for a period of about six months. The unit will be designed to withstand the rigorous environmental and handling conditions encountered in field operations.

## 2.0 SYSTEM DESCRIPTION

The general characteristics of the Rapid Interpretation Printer-Processor Flyaway Kit are shown in Figures 1 through 3. The light table and printer may be set up either as shown in Figure 1 or Figure 2 at the option of the operator. The processor and the system controls, housed in a light table shipping case as shown in Figure 3, will be placed on the floor beside the operator during use. The characteristics of the components of the Flyaway Kit are as follows:

### 2.1 Light Table

The light table will be a small, portable unit such as the [ ] GFL-918 LW. Actually, the printer and processor could be used in conjunction with almost any light table that uses the standard "T" rails to support the film reel brackets since this is the point of interface. The full flexibility and portability provided by the Flyaway Kit, however, can only be achieved by using it in connection with a portable light table such as the [ ] unit. The

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[ ] light table proposed for use in the system will not be modified in any manner. The interface between the table and the printer will be effected through an adapter which will fasten on to the "T" rail of the light table. Two adapters will be provided with each Flyaway Kit. One will provide interface with the light table in its 45° position and the other will be used with the table in

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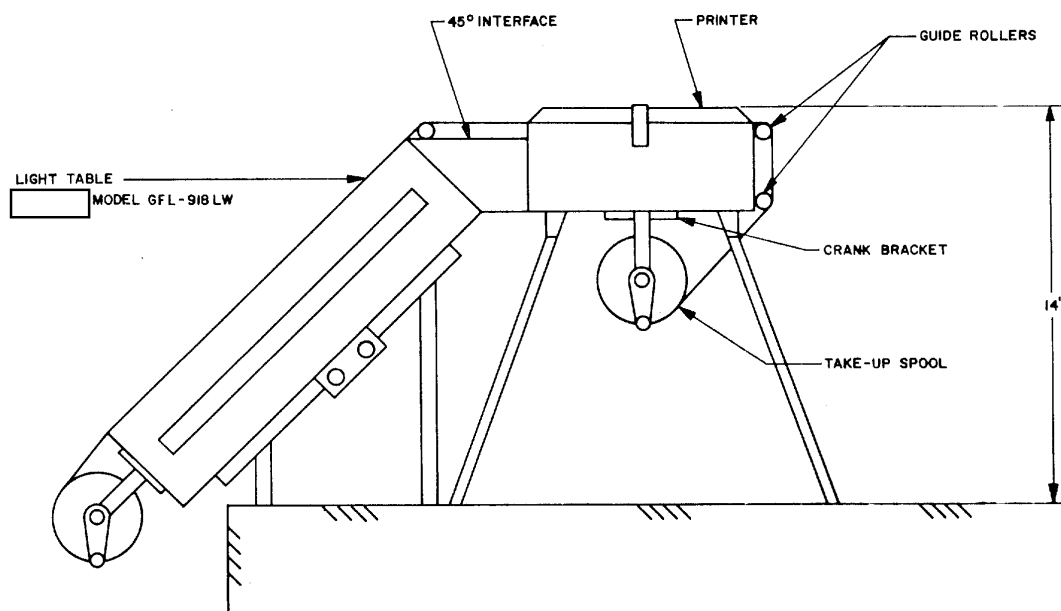


FIGURE 1 RAPID INTERPRETATION  
PRINTER — 45° INTERFACE

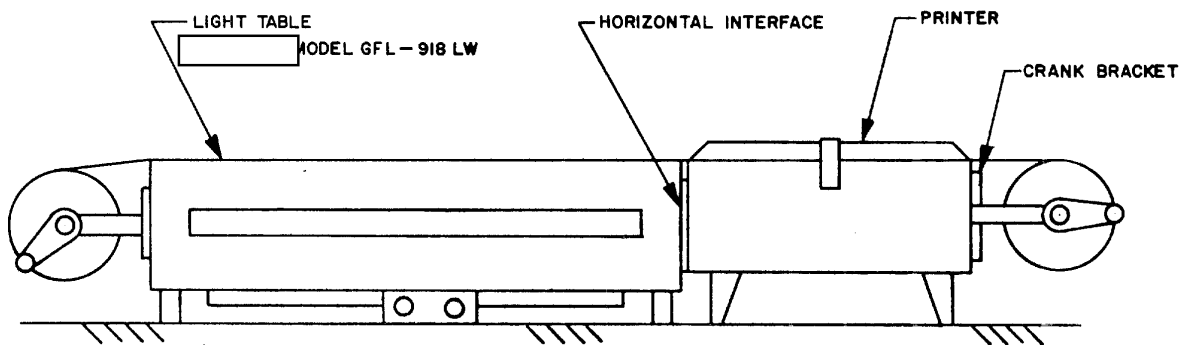


FIGURE 2, [REDACTED] RAPID INTERPRETATION  
PRINTER — HORIZONTAL INTERFACE

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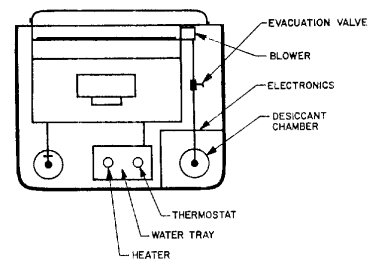
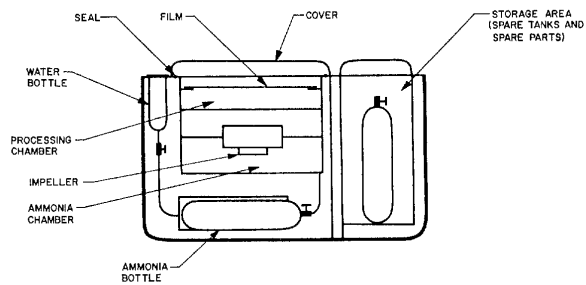
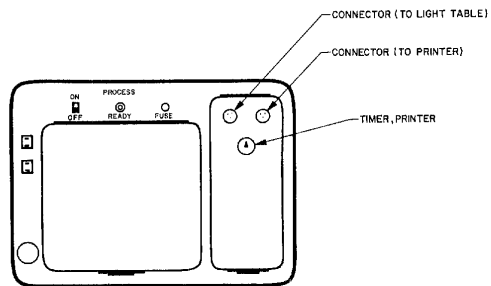


FIGURE 3. [REDACTED] RAPID INTERPRETATION  
PROCESSOR — PORTABLE MODEL

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the horizontal position. Simple leg extenders will be provided for the light table to increase its height so that 500 foot rolls of film may be accommodated while the table is in the horizontal position. Both the interface adapter and the leg extenders will utilize manually activated positive locks so that rapid set-up and tear-down is possible without special tools. The interface between the light table and the remainder of the Flyaway Kit will be designed so that any standard  GFL-918 LW may be substituted for the one in the Kit at any time.

## 2.2 Printer

The printer will expose a  $9\frac{1}{2}$  inch by  $9\frac{1}{2}$  inch Diazo copy in approximately twenty seconds. It is similar in design to the familiar contact printer and will have many of the characteristics of the printing assembly of the Rapid Interpretation Printer-Processor. The light source will be an Argon double grid lamp, manufactured by Aristo Grid Lamp Products, which is rich in the ultraviolet. The exposure surface will be of Vycor material with high transmission in the ultraviolet. The pressure platen will be designed as shown in Figure 5 (in envelope on back cover). It is similar to the platen of the Rapid Interpretation Printer-Processor but incorporates an adjustable feature in the pressure pad for more even pressure distribution over the entire format.

The printer may be used with the Light Table in the  $45^\circ$  or horizontal position. The printer will have short, permanent legs that place the exposure surface level with the light table viewing surface when used in a horizontal position (with leg extensions on the light table). The printer also has removable legs that support it when the light table is used in the  $45^\circ$  position. These legs, which are attached to the permanent legs by Pip-Pin or Snap-Lock connectors, are

canted out to provide support to the printer. When set-up, the printer-light table combination provides a sturdy and rigid unit which can accommodate the variable loadings imposed by the transfer of film from the supply to the take-up reel. "T" rail attachment points will be located at three points on the printer housing to permit the positioning of the take-up reel either at the bottom (as shown in Figure 1) or the end (as shown in Figure 2) of the printer housing. This will also permit the set-up of the unit for easy operation by either a right-handed or a left-handed operator. Rollers will be placed at strategic points on the printer housing to provide film protection during transport regardless of the mode of operation selected.

The control system and the power supply for the printer are located in the processor case. The power supply converts the input 110-120 volts, 60 cycle power to the high voltage required for exposure lamp operation. It also provides power for a thermostatically controlled heating element which is located in the printer housing and keeps the exposure lamp in a stand-by condition for immediate operation under control of the exposure timer. The timer permits the selection of exposure times from 1 to 60 seconds and, once set, will continue to expose at that setting until reset by the operator.

## 2.3 Processor Case

The processor case contains the processor, the system electronics, and spares storage.

### 2.3.1 Processor

The processor will be designed to provide rapid, complete processing of the exposed Diazo material. The processor consists of the following major components:

- 1) A processing chamber where the Diazo cut film, of any size up to

9 $\frac{1}{2}$  inches by 9 $\frac{1}{2}$  inches is subjected to the proper ammonia-moisture - temperature environment required for complete and uniform processing. The chamber will be approximately 10 inches long, 10 inches wide, and 0.1 inch deep. It will be accessed through a hinged cover that will permit the exposed film to be laid flat in the chamber. When the cover is shut, the chamber is completely sealed and will be capable of maintaining a slight differential pressure with respect to the atmosphere.

2) An ammonia chamber where a volume of ammonia approximately five times the volume of the processing chamber will be pre-heated to processing temperature in the presence of water vapor. Several processing cycles may be completed in rapid succession without depleting the ammonia in the chamber.

3) An ammonia tank with control valves and regulator to maintain the proper ammonia supply in ammonia chamber.

4) A water reservoir which provides the slight amount of moisture required in the ammonia chamber.

5) An impeller system for transferring a measured quantity of the pre-heated ammonia vapor from the ammonia chamber to the processing chamber.

6) A desiccant chamber through which the ammonia vapor is passed prior to being released to the atmosphere.

7) A sequence timer which programs the solenoid activated valves and controls during the processing cycle.

#### 2.3.2 System Electronics

The system electronics housed in the processor case consists of the electronics for control and operation of the processor and the power supply for the printer.

The processor electronics consists of a simple power distribution system to the heater and blowers and a sequence timer which, through the action of relays, activates solenoids that control valves, latches, pumps, etc., to implement the processing cycle.

The printer power supply will be identical to that used in the Rapid Interpretation Printer-Processor and will consist of a high-voltage power transformer for operation of the exposure lamp, a low-voltage source for the lamp stand-by heater, and a timer for control of the exposure lamp operations.

### 2.3.3 Spares Storage

Storage space will be provided in the processor case for the storage of spare parts adequate for six months operation of the Flyaway Kit. This will include spare fuses for the light table, printer, and processor, three extra tanks of ammonia (each tank is approximately  $2\frac{1}{2}$  inches in diameter and 11 inches long), a supply of desiccant material, and other expendable items that may be consumed during six months of field operation.

The processing case will be packaged for simplicity of operation and ease of maintenance. The design of the processing case will be such as to permit operation with all components (except the processing case cover and the power cables) located as required for shipping so that set-up time is minimized. All frequently used controls will be located on the top panel while those used only occasionally will be accessible through hinged panels. Access to components for maintenance purposes will be through hinged access panels also. Components will be selected and carefully mounted in the shipping cases so that they will provide reliable operation and will survive the rugged handling normally encountered in the transportation and use of field equipment.

### 3.0 SYSTEM OPERATION

The Rapid Interpretation Printer-Processor Flyaway Kit would initially be set up for operation as follows after transportation to the operational site.

- . Open shipping case containing light table and printer and set up on a work table as shown in Fig. 1 or Fig. 2. Printer may be set up for left or right hand operation.
- . Place reconnaissance film on light table - printer unit.
- . Place processor case on floor at left or right side of operator position.
- . Remove the cover and the power cables stored within it.
- . Plug in the existing light table power cable into the connector provided on the upper panel of the processor case.
- . Connect the printer cable to the printer and the processor case.
- . Open ammonia tank shut off valve. (This valve need only be shut off during transportation).
- . Pour about one pint of water into the water bottle.
- . Plug processor case power cable into 110-100 volt, 60 cycle wall receptacle.
- . Turn main power switch on. This provides power to the processor, the printer, and the light table.
- . Turn processor on. Allow processor to warm up for approximately 20 minutes. This will charge the ammonia chamber with ammonia and will turn on the processor heater so that the ammonia is brought up to temperature in the presence of water vapor. When conditions are proper, processor ready lamp will light signifying that processing may begin.

- . Interpretation of the reconnaissance film may begin while processor is warming up.
- . Upon location of a segment of film to be copied, transport it to printer exposure area, place Diazo film atop it with emulsion down (emulsion to emulsion), close pressure platen, set exposure timer, and depress exposure button.
- . Remove exposed Diazo film from printer when timer snaps off. (Approximately 20 seconds).
- . Open processor cover and lay exposed Diazo film in the processing chamber, close processor cover to seal chamber.
- . Press processor cycle button (an interlock will prevent the start of the processing cycle unless the cover is down and locked). The following events will occur in sequence:
  - . A small pump will draw air from the processing chamber to create a partial vacuum.
  - . A charge of pre-heated ammonia is transferred from the ammonia chamber to the processing chamber. The partial vacuum in the processing chamber and small baffles in the chamber will cause even distribution of the ammonia. The ammonia remains in the processing chamber for twenty seconds.
  - . Two check valves are released by a solenoid. At the same time a small pump draws the ammonia vapor from the processing chamber and through a desiccant chamber and then exhausts it into the atmosphere. The check valves allow air to be drawn into the chamber to replace the ammonia vapor. A pop-valve on the exit end of the desiccant chamber prevents the saturation of the desiccant by atmospheric vapor.

- . A solenoid releases a catch on the processor cover so that it may be opened.
- . A process cycle complete lamp is lighted.
- . Remove processed film from the processor and continue operation.

The total processing cycle will be approximately thirty seconds in duration. This includes ten seconds for the creation of the partial vacuum and the transfer of the ammonia vapor charge and twenty seconds processing time. Once the equipment has been initially set up, all subsequent operation at that site may be controlled by the main power switch located on the processor case. When the equipment is no longer required at the site, it may simply be repacked into the two light table shipping cases and transported to a new location and set up as described above.

#### 4.0 PROGRAM PLAN

STAT [ ] proposes to design and develop the Rapid Interpretation Printer Processor Flyaway Kit within the twelve week schedule shown in Figure 4. Three Flyaway Kits would be delivered within the fourteen week schedule shown. STAT Preliminary testing at [ ] has shown that the principles upon which the design is based are sound and that successful development of the units can be accomplished within the relatively short schedule proposed.

#### 5.0 PROGRAM COSTS

The costs for this program for the development of the Rapid Interpretation Printer Processor Flyaway Kit are presented in three areas as follows:

- a) The engineering design, fabrication, assembly and test of a complete Rapid Interpretation Printer-Processor Flyaway Kit.
- b) The fabrication, assembly and test of a second Flyaway Kit.
- c) The fabrication, assembly and test of a third Flyaway Kit.

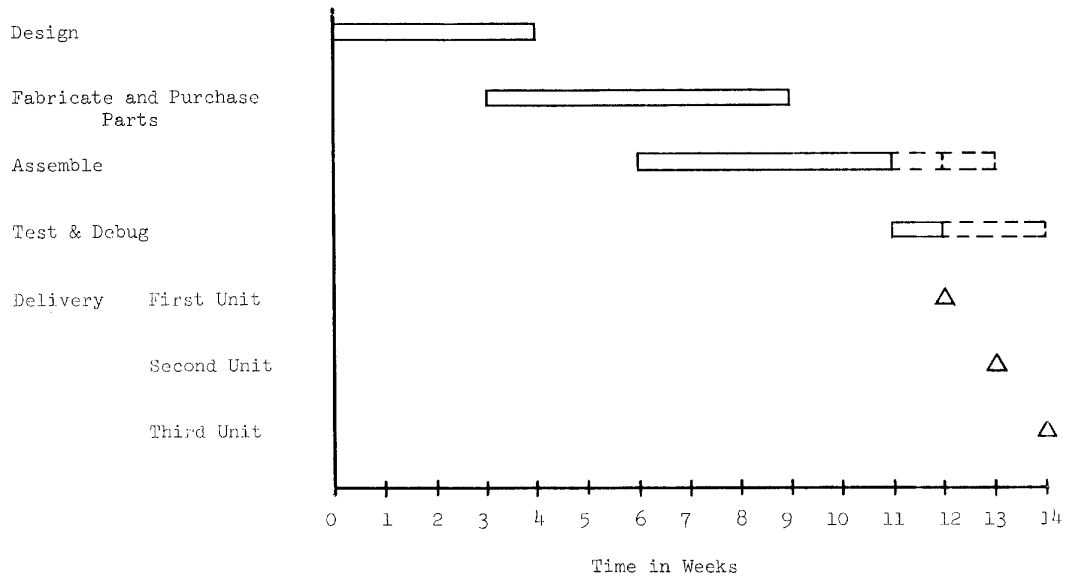


Figure 4 Program Schedule - Rapid Interpretation Printer - Processor Fly - Away Kit

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The cost of each item is based upon the availability of a

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GFL-918 LW Light Table and two shipping cases as GFE.